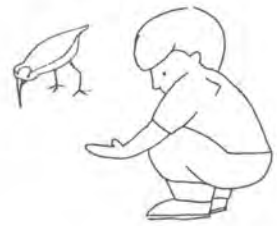


SHOVELERS ON THE MOVE

Overview: In this activity, students study the migration of northern shovelers by hearing a story, creating northern shoveler puppets, and mapping the route northern shovelers take along the Pacific Flyway.

Content Standards Correlations: Science, p. 292

Grades:
Part 1: 3-6
Part 2: 3-4
Part 3: 3-6

Key Concepts: Migratory shorebirds and waterfowl, such as the northern shoveler, move seasonally between northern nesting grounds in the summer and warmer southern areas in the winter. While traveling between the two, these migratory birds need wetland habitats, such as the wetlands of San Francisco Bay, where they can feed and rest.

Objectives:
Students will be able to:
- define migration and explain why birds migrate
- name three hazards encountered during migration

Materials:
Part 2: Shoveler Puppets
- Paper lunch bags (one per student)
- Copies of the puppet pattern on p. 148 (one per student)
- Scissors
- Glue
- Crayons

Part 3: Bird Banding
- Copies of map and band reports (p. 149, 150, 151) (one per group of 3 to 5 students)

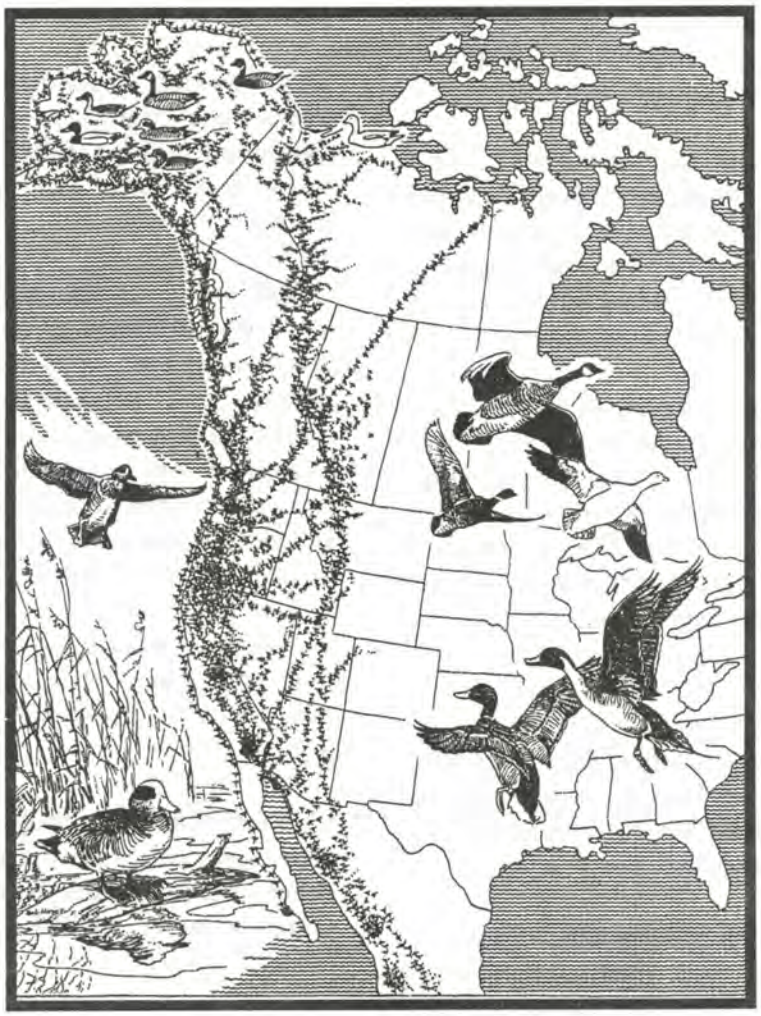
Time:
Part 1: 15 minutes
Part 2: 20 minutes
Part 3: 25 minutes

SUPPORTING INFORMATION ABOUT THIS ACTIVITY

- Migration means to change location periodically, especially to move seasonally from one region to another.
  - Every year throughout North America, ducks, geese, and a number of other types of birds, make very long migratory flights usually along one of four major routes called flyways.
  - In the summer months, birds breed and raise young in the north where there is an abundance of food and space.
  - Birds travel south to warmer climates in the winter, but return every summer to the north for the breeding season.
  - Times and distances of annual migrations are not the same for all birds. Some birds begin their fall migration in late summer, others in late fall. Migratory birds may travel during the day, night, or continuously. Some birds migrate thousands of miles, while others travel less than one hundred. Some have a leisurely migration, while others fly swiftly to their destination. Spring migrations are generally faster than fall migrations because of the stimulus to breed and nest.
  - Most migratory birds have very powerful flight muscles, highly developed respiratory systems, hollow bones, internal air sacs, and specialized body shapes, all of which allow birds to fly high, fast, and for long periods of time.
- The routes that migratory birds take on their journeys are called flyways. There are four major flyways in North America: the Atlantic Flyway, Mississippi Flyway, Central Flyway, and Pacific Flyway.
  - The San Francisco Bay is an important part of the Pacific Flyway. Its wetlands provide important resting and feeding grounds. Birds stop to feed and continue their journeys.
  - One reason the Don Edwards San Francisco Bay National Wildlife Refuge exists is to protect migratory birds. The refuge preserves wetland habitats for migratory birds.
  - Ducks are a type of waterfowl. The Shoveler is a dabbling duck. WIth its broad shovel-like beak it feeds off the water's surface. While swimming they eat small plants and animals by sucking up water and sifting teh food through their beaks.
- Scientists study migration in order to determine a number of things, including which habitats are important to migratory birds as they travel and whether or not migratory birds are finding sufficient food during their journeys.
  - Scientists study the migratory habits of birds through a variety

of methods, one of which is bird banding.

- In the United States, a Bird Banding Laboratory in Maryland is administered by the United States Geological Survey (USGS), in order to study migratory birds.
  - Licensed bird banders around the country operate stations where migratory birds are safely captured, numbered bands are attached to their legs, and physical information is recorded. The birds are then released unharmed.
  - Hunters or others send bands they find on birds and facts of their recovery to the Bird Banding Laboratory, along with information on where and when they got the band.
  - The National Biological Service can use the information on when and where the birds were found to learn about population dynamics, migratory routes, lifespan and habitats of that species. This kind of information is used to create distribution reports.
- If you see a bird with a bird band, record the number on the band as well as the date and location of the sighting. Send this information to: USGS Patuxent Wildlife Research Center, Bird Banding Laboratory, Office of Migratory Bird Management, 12100 Beech Forest Road, Laurel, Maryland 20708-4037, or call 1-800-327-BAND (2263), or visit www.pwrc.nbs.gov/bbl. You will be sent a Certificate of Appreciation and the person who banded the bird will be notified of your report.



Part 2: Northern Shoveler Puppets (20 minutes)
(Grades 3-4)
Do
Hand out one paper bag and one copy of the northern shoveler beak pattern to students, along with crayons, scissors, and glue. Instruct the students to cut out and color their northern shoveler beaks. Encourage them to color them as accurately as possible. If they want to make a male northern shoveler, the head should be green and the bill should be black. For a female northern shoveler, the bill is also black, but the head is brown and black. Male ducks usually have more colorful feathers, while females blend in with their surroundings. This makes it harder for predators to find and harm them, their young, or their eggs. The bill with the eyes should be glued to the flap of the bag and the bottom bill should be glued underneath the flap. Students can color the bag to represent the body of their waterfowl. Now they each have a northern shoveler hand puppet.

Adapted from "Paper Bag Mallards", Central Valley Habitat Fun Pack, U. S. Fish and Wildlife Service, 1992.

Part 3: Bird Banding (25 minutes)
(Grades 3-6)
Read
"In this activity, you are to become wildlife biologists. Your job is to figure out the route taken by northern shovelers as they migrate back and forth across North America between their breeding grounds in the north and their wintering grounds in the south."

Do
Divide the students into small groups (3 to 5 students per group). Pass out the band report data sheets to groups along with copies of the migration maps.

Read
"As a biologist, reports from hunters, naturalists, hikers, school children, and bird watchers who have found banded northern shovelers are constantly being sent to you. These band reports have been collected on your sheet of paper. Each band report has a date on it from which you'll be able to tell whether the bird was migrating north or south, or if it was at its summer or wintering grounds."

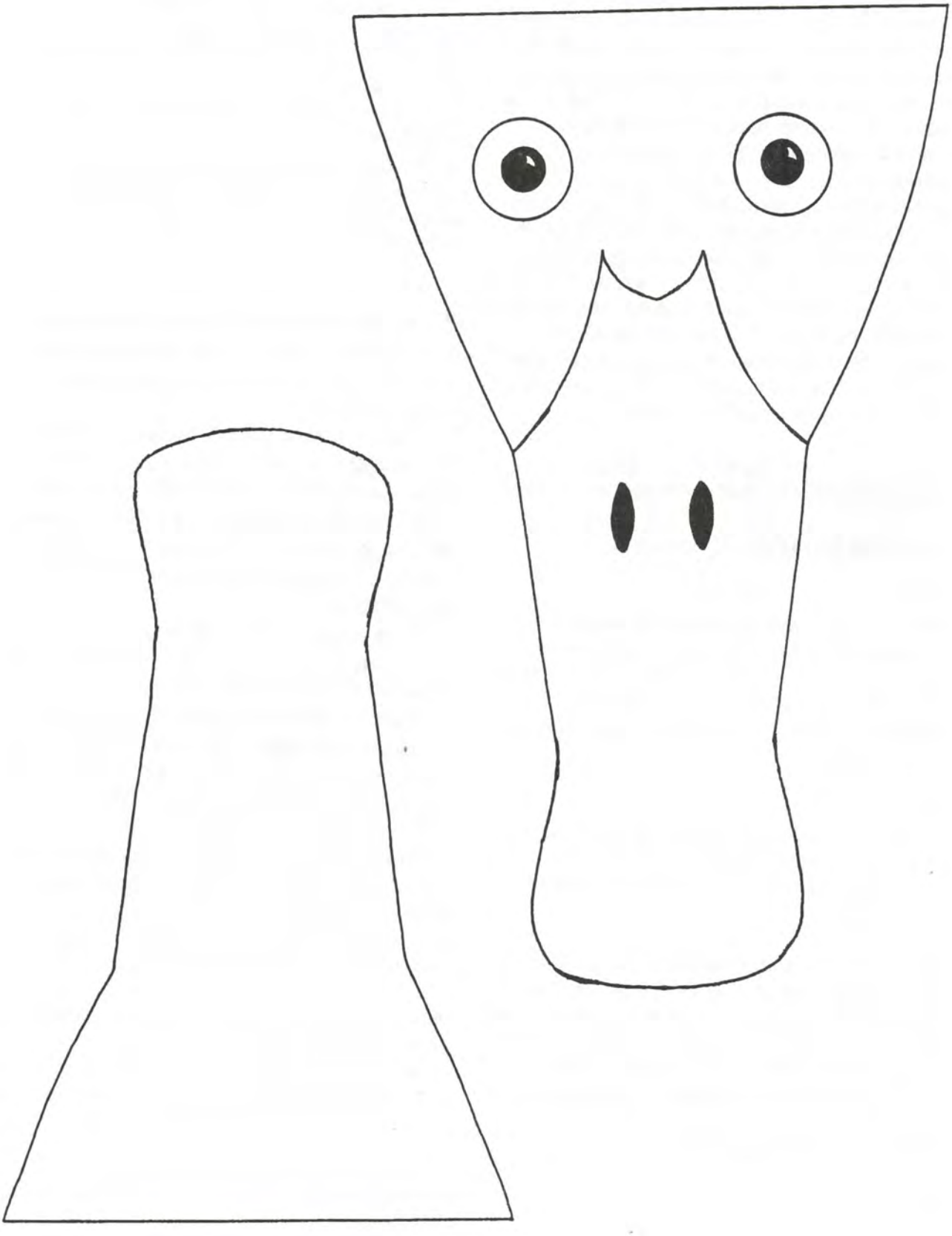
Read
"These are the directions for mapping:
1. Find the key on the map page and color in each box using a different color.
2. Read each band report and determine by the date what the bird was doing. For example, if the band was found in British Columbia in July, the bird was at its summer breeding ground. Using the corresponding color, mark the location with a dot on the map.
3. Continue doing this until all bands have been mapped.
4. Shade in the spaces between the same color dots in order to map the flyways. This process is an actual one used by scientists to figure out the routes of migratory birds."

Ask
? Can you tell by looking at your map where the migration routes for northern shovelers are? (Answers will vary - this is a generalization of migration routes.)
? What are some of the breeding grounds of the northern shoveler? (Washington, British Columbia, Alberta, Northwest Territories, Yukon.)
? Why would the ducks want to migrate north? (More space to breed and feed, less competition. The food supply is considerably better in summer in the northern climates.)
? When northern shovelers migrate south for the winter, what are some of their destinations? (Oregon, California, Nevada, Mexico.)
? Where do northern shovelers rest during their long migrations? (Wetlands along the Pacific Flyway, such as the Don Edwards San Francisco Bay National Wildlife Refuge. They need wetlands along the entire route for feeding and resting.)
? What might be an effect if wetlands are lost due to development, pollution, or draining? (Birds won't have as many places to feed and rest during their migration. The ones that remain could become overcrowded, and populations may decline.)

Idea for writing and speaking topic of Language Arts Content Standards, p. 297.
Students can explore:
- the path of another migratory bird that uses the Pacific Flyway (see animal list, p. 26-39).

Adapted from "Mapping the Pacific Flyway", p. 29, Wetlands Protectors, California Aquatic Science Education Consortium.

Northern Shoveler Puppet Pattern



MAP OF NORTH AMERICA

Alaska
Yukon
Northwest Territories
British Columbia
Alberta
Washington
Montana
Oregon
Idaho
Nevada
Utah
California
Arizona
Mexico

Key

Wintering grounds
January

Migrating north
February, March, April

Breeding grounds
May, June, July, August

Migrating south
September, October, November, December

NORTHERN SHOVELER BAND REPORTS, PAGE 1

1. Northern Shoveler captured live in agricultural field, California Central Valley. February 15, 1994.

2. Northern Shoveler seen by vacationers in lagoon near Cabo San Lucas at the southern tip of Baja California. December 1, 1993.

3. Northern Shoveler injured by hunting party outside Sacramento, California. January 20, 1994.

4. Collared Northern Shoveler spotted by bird watching group in Alberta, western Canada. August 8, 1994.

5. Northern Shoveler found in southern British Columbia. Killed by predator. August 30, 1994.

6. Northern Shoveler recorded by researchers at Salton Sea, southern California. Spotted there previous winter. February 12, 1994.

7. Band number of Northern Shoveler read by birder at Ruby Lake National Wildlife Refuge, eastern Nevada. March 1, 1994.

8. Northern Shoveler band spotted by school group doing a field trip at Don Edwards San Francisco Bay National Wildlife Refuge. January 28, 1994.

9. Northern Shoveler caught by neighborhood dog at San Pablo Bay Reservoir, northern California. November 25, 1993.

10. Northern Shoveler spotted and reported by research vessel in Cook Inlet, southern Alaska. June 30, 1995.

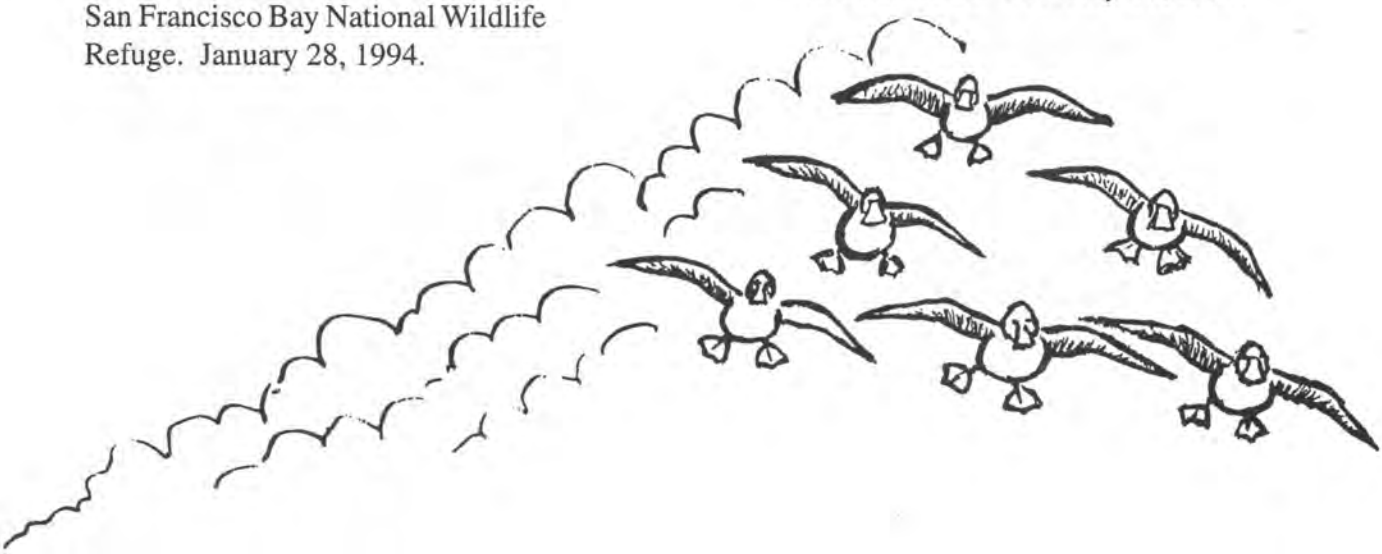
11. Banded Northern Shoveler captured live by campers in Northwest Territories, northern Canada. July 20, 1994.

12. Northern Shoveler observed by farmer while feeding in rice fields, California Central Valley. March 1, 1994.

13. Northern Shoveler found by family in southern Oregon after weakened by severe storm. October 3, 1993.

14. Northern Shoveler spotted by birder at Nisqually National Wildlife Refuge, southern end of Puget Sound, northwestern Washington. November 30, 1993.

15. Injured Northern Shoveler found by hikers near a mountain lake in the central Sierra Nevada Mountains, eastern California. February 26, 1994.



NORTHERN SHOVELER BAND REPORTS, PAGE 2

16. Northern Shoveler spotted by researcher at Salton Sea, southern California. January 2, 1994.

17. Northern Shoveler shot by hunter in Butte Sink, California Central Valley. December 3, 1993.

18. Northern Shoveler found in weakened condition at Tsawwassen Indian Reservation near Vancouver, British Columbia. March 7, 1994. Same bird last reported in central Mexico, December 10, 1993.

19. Northern Shoveler caught in center of Yukon Territory, northwestern Canada. May 12, 1994.

20. Northern Shoveler found dead around the San Juan Islands, northern Washington. February 5, 1994.

21. Injured Northern Shoveler captured by refuge employee in Tijuana Slough Refuge, northern Mexico.

22. Northern Shoveler spotted in salt pond, Don Edwards San Francisco Bay National Wildlife Refuge. December 14, 1993.

23. Northern Shoveler found by fisherman in northwestern section of Northwest Territories, dead of unknown causes. July 10, 1994.

24. Northern Shoveler found, released and found again 1 year later by researchers near Juneau, southern Alaska. May 1993 and August 1994.

25. Northern Shoveler spotted by birders in central Alberta, Canada. June 15, 1994.

26. Northern Shoveler found by resident near Klamath Falls, southern Oregon. October 30, 1993.

27. Northern Shoveler found dead near Portland International Airport, northwestern Oregon. Cause of death: collision with air traffic control tower. March 2, 1994.

28. Northern Shoveler band sent in from Alberta, Canada, with no information regarding recovery. September 9, 1994.

29. Hikers found dead Northern Shoveler with band intact in Eastern Montana. April 3, 1994.

30. Northern Shoveler found by tracker near Seattle, Washington. April 16, 1994.

31. Northern Shoveler captured and released by residents in Yukon Territory, northern Canada. August 3, 1994.

32. Dead Northern Shoveler found entangled in power lines outside of Los Angeles, California. February 20, 1994.

33. Northern Shoveler found and released by banders on north coast of British Columbia. January 11, 1994.

34. Northern Shoveler caught by hand and released in Alberta, Canada. April 14, 1994.